



RECEIVED

OCT 10 2002

TECH CENTER 1600/2900

Exhibit A

CURRICULUM VITAE

John David Sinden

UNIVERSITY

B.A. (Hons) in Psychology Class II Div I, The University of Sydney, 1972.

M.A. (Hons) in Psychology Class I, The University of Sydney, 1980.

Dr 3rd Cyc Neurosciences, Université Pierre et Marie Curie, Paris VI, 1983.

SCHOLARSHIPS, FELLOWSHIPS, AWARDS

Commonwealth University Scholarship, 1969-1972.

University Medal in Psychology, The University of Sydney, 1981.

French Government Postgraduate Scholarship, 1980-1983.

European Training Programme in Brain and Behaviour short-term fellowship, 1983.

EMPLOYMENT

A.R.G.C. Research Assistant in Psychophysiology, Macquarie University, 1973-1975.

Tutor in Psychology (full-time), The University of Sydney, 1977-1980.

Research Student, Laboratoire de Neurophysiologie Sensorielle et Comportementale, Collège de France, Paris, 1980-1983.

Post-doctoral research assistant, Department of Experimental Psychology, University of Oxford, 1983-1984.

Research worker (UFC funded), Department of Psychology, The Institute of Psychiatry, 1984-1987.

Lecturer B in Psychology (HEFC funded), Department of Psychology, The Institute of Psychiatry, 1987-1991, Confirmed 1990, Recognised Teacher of London University.

Senior Lecturer in Psychology (HEFC funded), Department of Psychology, The Institute of Psychiatry, 1991-1996.

Reader in Neurobiology of Behaviour (HEFC funded), Kings College London (Institute of Psychiatry), 1996-1998

Co-founder and Consultant, ReNeuron Limited, 1997-1998

Research Director and Board Member, ReNeuron Limited, 1998-

John D. Sinden

Bibliography

Clarke, A.M., Michie, P.T., Glue, L.C.T. & Sinden, J.D. Intermittent ipsilateral and contralateral hemiretinal stimulation and its effects on the phasic stretch reflex. *Physiology and Behavior* 12, 1079-1082, 1974.

Atrens, D.M. & Sinden, J.D. Anatomically-dependent facilitation and inhibition of hypothalamic self-stimulation by food deprivation. *Behavioral Biology* 13, 225-231, 1975

Atrens, D.M., Sinden, J.D., Becker, F.T., Hunt, G. & Lyle, J.G. The motivational properties of electrical stimulation of the guinea pig diencephalon. *Behavioral Biology* 15, 149-158, 1976.

Michie, P.T., Clarke, A.M., Sinden, J.D. & Glue, L.C.T. Lateral facilitation of Hoffmann reflexes prior to voluntary movement in a choice reaction time task. *Applied Neurophysiology* 38, 191-196, 1975.

Michie, P.T., Clarke, A.M., Sinden, J.D. & Glue, L.C.T. Reaction time and spinal excitability in a simple reaction time task. *Physiology and Behavior* 16, 311-315, 1976.

Sinden, J.D. & Atrens, D.M. 5-Methoxy-NN-dimethyltryptamine: differential modulation of the rewarding and aversive components of lateral hypothalamic self-stimulation. *Journal of Pharmacy and Pharmacology* 30, 268-269, 1978.

Sinden, J.D. & Le Magnen, J. Parameters of low-dose intravenous ethanol self-administration in the rat. *Pharmacology, Biochemistry and Behavior* 16, 181-183, 1982.

Sinden, J.D. & Atrens, D.M. Dopaminergic and noradrenergic inhibition of hypothalamic self-stimulation: Differentiation of reward and performance effects. *European Journal of Pharmacology* 86, 237-246, 1983.

Atrens, D.M., Sinden, J.D. & Hunt, G.E. Dissociating the determinants of self-stimulation. *Physiology and Behavior* 31, 787-799, 1983.

Sinden, J.D., Marfaing-Jallat, P. & Le Magnen, J. The effects of naloxone on intragastric ethanol self-administration. *Pharmacology, Biochemistry and Behavior* 19, 1045-1048, 1983.

Atrens, D.M., Sinden, J.D., Penicaud, L., Louis-Sylvestre, J. & Le Magnen, J. The effect of electrical stimulation of the hypothalamus on continuously-monitored blood glucose levels. *Physiology and Behavior* 33, 537-542, 1984.

Atrens, D.M., Sinden, J.D., Penicaud, L., Devos, M. & Le Magnen, J. Hypothalamic modulation of energy expenditure. *Physiology and Behavior* 35, 15-20, 1985.

Jarrard, L.E., Feldon, J., Rawlins, J.N.P., Sinden, J.D. & Gray, J.A. The effects of intrahippocampal ibotenate on resistance to extinction after continuous or partial reinforcement. *Experimental Brain Research* 61, 519-530, 1986.

Sinden, J.D., Rawlins, J.N.P., Gray, J.A. & Jarrard, L.E. Selective cytotoxic lesions of the hippocampal formation and DRL performance in rats. *Behavioral Neuroscience*, 100: 320-329, 1986.

Coffey, P.J., Perry, V.H., Allen, Y., Sinden, J. & Rawlins, J.N.P. Ibotenic acid induced demyelination in the central nervous system: a consequence of a local inflammatory response. *Neuroscience Letters* 84, 178-184, 1988.

Hawkins, M., Sinden, J., Martin, I. & Gray, J.A. Effects of RO 15-1788 on a running response rewarded on continuous or partial reinforcement schedules. *Psychopharmacology* 94, 371-388, 1988.

Arendt, T., Allen, Y., Sinden, J., Schugens, M.M., Marchbanks, R.M., Lantos, P.L. & Gray, J.A. Cholinergic-rich brain transplants reverse alcohol-induced memory deficits. *Nature* 332, 448-450, 1988.

Sinden, J.D., Jarrard, L.E. & Gray, J.A. The effects of intra-subicular ibotenate on resistance to extinction after continuous or partial reinforcement. *Experimental Brain Research* 73: 315-319, 1988.

Rawlins, J.N.P., Maxwell, T.J. & Sinden, J.D. The effects of fornix section on win-stay/lose-shift and win-shift/lose-stay performance in the rat. *Behavioural Brain Research* 31: 17-28, 1988.

Allen, Y.S., Marchbanks, R.M. & Sinden, J.D. Non-specific effects of the putative cholinergic neurotoxin ethylcholine mustard aziridinium ion in the rat brain examined by autoradiography, immunocytochemistry and gel electrophoresis. *Neuroscience Letters* 95: 69-74, 1988.

Pacteau, C., Eimon, D. & Sinden, J. Early rearing environment and dorsal hippocampal ibotenic acid lesions: long-term influences on spatial learning and alternation in the rat. *Behavioural Brain Research* 34: 79-96, 1989.

Coffey, P.J., Feldon, J., Mitchell, S., Sinden, J., Gray, J.A. & Rawlins, J.N.P. Ibotenate-induced total septal lesions reduce resistance to extinction but spare the partial reinforcement extinction effect in the rat. *Experimental Brain Research* 77: 140-152, 1989.

Arendt, T., Allen, Y.S., Marchbanks, R.M., Schugens, M.M., Sinden, J., Lantos, P.L. & Gray, J.A. Cholinergic system and memory in the rat: effects of chronic ethanol, embryonic basal forebrain transplants and excitotoxic lesions of cholinergic basal forebrain projection systems. *Neuroscience*, 33: 435-462, 1989.

Sinden, J.D., Allen, Y.S., Rawlins, J.N.P. & Gray, J.A. The effects of ibotenic acid lesions of the nucleus basalis and cholinergic-rich neural transplants on win-stay/lose-shift and win-shift/lose-stay performance in the rat. *Behavioural Brain Research*, 36: 229-249, 1990.

Kershaw, T.R., Sinden, J.D., Allen, Y.S., Gray, J.A. & Lantos, P.L. Behavioural recovery following transplantation of the neuroblastoma cell line IMR-32. *Progress in Brain Research*, 82: 47-53, 1990.

Hodges, H., Allen, Y., Sinden, J., Lantos, P.L. & Gray, J.A. Cholinergic-rich foetal cell transplants improve cognitive function in lesioned rats, but exacerbate supersensitive response to cholinergic drugs. *Progress in Brain Research*, 82: 347-358, 1990.

Gray, J.A., Sinden, J.D. & Hodges, H. Cognitive function: neural degeneration and transplantation. *Seminars in the Neurosciences*, 2: 133-142, 1990.

Williams, J.H., Gray, J.A., Sinden, J.D., Buckland, C. & Rawlins, J.N.P. Effects of GABAergic drugs, fornixotomy, hippocampectomy and septal lesions on the extinction of a discrete-trial fixed ratio 5 lever-press response. *Behavioural Brain Research* 49: 129-150, 1990.

Hodges, H., Allen, Y., Sinden, J.D., Mitchell, S.N., Lantos, P.L. & Gray, J.A. The effects of cholinergic drugs and cholinergic-rich foetal neural transplants on alcohol-induced deficits in radial-maze performance in rats. *Behavioural Brain Research* 43: 7-28, 1991.

Wets, K.M., Sinden, J., Hodges, H., Allen, Y. & Marchbanks, R.M. Specific brain protein changes correlated with behaviourally effective brain transplants. *Journal of Neurochemistry*, 57: 1661-1670, 1991.

Hodges, H., Allen, Y., Kershaw, T., Lantos, P.L., Gray, J.A. & Sinden, J. Effects of cholinergic-rich neural grafts on radial maze performance of rats after excitotoxic lesions of the forebrain cholinergic projection system. 1. Amelioration of cognitive deficits by transplants into cortex and hippocampus but not into basal forebrain. *Neuroscience*, 45: 587-607, 1991.

Hodges, H., Allen, Y., Sinden, J., Lantos, P.L. & Gray, J.A. The effects of cholinergic-rich neural grafts on radial maze performance of rats after excitotoxic lesions of the forebrain cholinergic projection system. 2. Cholinergic drugs as probes to investigate lesion-induced deficits and transplant-induced functional recovery. *Neuroscience*, 45: 609-623, 1991.

Marsden, K.M., Kershaw, T.R., Sinden, J.D. & Lantos, P.L. Survival and distribution of transplanted human IMR-32 neuroblastoma cells. *Brain Research*, 568: 76-84, 1991.

Hodges, H., Gray, J.A., Allen, Y. & Sinden, J. The role of the forebrain cholinergic projection system in performance in the radial-arm maze in memory-impaired rats. in: *Effects of Nicotine on Biological Systems*, Adlkofer, A. & Thureau, K., Eds., Basel, Birkhauser Verlag, 389-399, 1991.

Hodges, H., Sinden, J., Turner, J.J., Netto, C.A., Sowinski, P. & Gray, J.A. Nicotine as a tool to characterise the role of the forebrain cholinergic projection system in cognition. in: *The Biology of Nicotine*, Lipiello, P.M., Collins, A.C., Gray, J.A. & Robinson, J.H., Eds., New York, Raven Press, 157-180, 1992.

Sinden, J.D., Marsden, K.M. & Hodges, H. Neural transplantation and recovery of function. *Animal studies*. in: *Recovery from Brain Damage: Reflections and Directions*, Rose, F.D. & Johnson, D.A., Eds., New York, Plenum, 1992, 35-65.

Turner, J.J., Hodges, H., Sinden, J.D. & Gray, J.A. Comparison of radial maze performance of rats after ibotenate and quisqualate lesions of the forebrain cholinergic projection system: effects of pharmacological challenge and changes in training regime. *Behavioural Pharmacology*, 3: 359-374, 1992.

Sinden, J.D., Patel, S.N. & Hodges, H. Neural transplantation: Problems and prospects for therapeutic application. *Current Opinion in Neurology and Neurosurgery*, 5: 902-908, 1992.

Netto, C.A., Hodges, H., Sinden, J.D., Le Peillet, E., Kershaw, T., Sowinski, P., Meldrum, B.S. & Gray, J.A. The effects of fetal hippocampal field grafts on ischaemic-induced deficits in spatial navigation in the water maze. *Neuroscience*, 54: 69-92, 1993.

Hodges, H., Sinden, J.D., Meldrum, B.S. & Gray, J.A. Transplantation in animal models of ischaemia. in: *Functional Neural Transplantation*, Dunnett, S.B. & Björklund, A. Eds., New York, Raven Press, 1994, 347-385.

Sinden, J.D., Gray, J.A. & Hodges, H. Cholinergic grafts and cognitive function. in: *Functional Neural Transplantation*, Dunnett, S.B. & Björklund, A. Eds., New York, Raven Press, 1994, 253-293.

Kershaw, T.R. & Sinden, J.D. Survival of fetal neural tissue from the H-2K^b-tsA58 transgenic mouse grafted to adult mouse brain. *Cell Transplantation*, 2: 215-222, 1993.

Calaminici, M., Abdulla, F.A., Sinden, J.D. & Stephenson, J.D. Specific axonal outgrowth from cholinergic fetal grafts to cholinergically-deafferented rat cortex. *Neuroreport*, 4: 585-587, 1993.

Dawe, G.S., Gray, J.A., Sinden, J.D., Stephenson, J.D. & Segal, M. Extracellular recordings in the colchicine-lesioned rat dentate gyrus following transplants of fetal dentate gyrus and CA1 hippocampal subfield tissue. *Brain Research*, 625: 63-74, 1993.

Abdulla, F.A., Calaminici, M.R., Stephenson, J.D. & Sinden, J.D. Chronic treatments with cholinceptor drugs influence spatial learning in rats. *Psychopharmacology*, 111: 508-511, 1993.

Wets, K.M., Patel, S.N., Sinden, J. & Marchbanks, R.M. Immunoidentification of cellular brain proteins associated with cognitive recovery in brain transplants. *Experimental Brain Research*, 97: 466-470, 1994.

Abdulla, F.A., Calaminici, M.R., Raevsky, V.V., Sinden, J.D., Gray, J.A. & Stephenson, J.D. An iontopheretic study of the effects of AMPA lesions of the nucleus basalis magnocellularis on cholinergic and GABAergic influences on frontal cortex neurones of rats. *Experimental Brain Research*, 98: 441-456, 1994.

Abdulla, F.A., Calaminici, M.R., Stephenson, J.D. & Sinden, J.D. Unilateral AMPA lesions of nucleus basalis magnocellularis induce a sensorimotor deficit which is differentially altered by arecoline and nicotine. *Behavioural Brain Research*, 60: 161-169, 1994.

Gray, J.A., Sinden, J.D. & Hodges, H. The use of neural transplants to restore cognitive deficits. in: *International Perspectives on Psychological Science Volume 2: The State of the Art*, d'Ydewalle, G. Eelen, P., Bertelson, P. Eds., Hove, Lawrence Erlbaum, 1994, 177-196.

Netto, C.A., Hodges, H., Sinden, J.D., LePeillet, E., Kershaw, T., Sowinski, P., Meldrum, B.S. & Gray, J.A. Fetal grafts from hippocampal regio superior alleviate ischemic-induced behavioral deficits. *Behavioural Brain Research*, 58: 107-112, 1993.

Kleschevnikov, A.M., Sinden, J.D. & Marchbanks, R. Fimbria-fornix lesions impair spatial performance and induce epileptic-like activity but do not affect long-term potentiation in the CA1 region of rat hippocampal slices. *Brain Research*, 656: 221-228, 1994.

Grigoryan, G.A., Mitchell, S.N., Hodges, H., Sinden, J.D. & Gray, J.A. Are the cognitive enhancing effects of nicotine in the rat with lesions to the forebrain cholinergic projection system mediated by an interaction with the noradrenergic system? *Pharmacology, Biochemistry and Behavior*, 49: 511-521, 1994.

Abdulla, F.A., Smith, S.E., Calaminici, M., Stephenson, J.D., Sinden, J.D., Meldrum, B.S. & Gray, J.A. Cholinceptor sensitivity and behavioral deficits after middle cerebral artery occlusion in rats. in: *Pharmacology of Cerebral Ischemia 1994*, Kriegelstein, J., Oberpichler-Schwenk, H. Eds., Stuttgart, Medpharm, 1994, 531-540.

Abdulla, F.A., Abu-Bakra, M.A.J., Calaminici, M.-R., Stephenson, J.D. & Sinden, J.D. Importance of forebrain cholinergic and GABAergic systems to the age-related deficits in water maze performance of rats. *Neurobiology of Aging*, 16: 41-52, 1995.

Hodges, H., Sowinski, P., Sinden, J.D., Netto, C.A. & Fletcher, A. The selective 5-HT₃ receptor antagonist, Way100289, enhances spatial memory in rats with ibotenate lesions of the forebrain cholinergic projection system. *Psychopharmacology*, 117: 318-332, 1995.

Gray, J.A., Sinden, J.D. & Hodges, H. Psychoarithmetic or pick your own? Commentary on 'Two functional components of the hippocampal memory system' H. Eichenbaum, T. Otto & N.J. Cohen. Behavioral and Brain Sciences, 17: 478-479, 1994.

Sinden, J.D., Hodges, H. & Gray, J.A. Neural transplantation and recovery of cognitive function. Behavioral and Brain Sciences, 18: 10-35, 1995.

Sinden, J.D., Hodges, H. & Gray, J.A. Grafts and the art of mind's reconstruction, authors' response to commentaries on Sinden, J.D., Hodges, H. & Gray, J.A. Neural transplantation and recovery of cognitive function. Behavioral and Brain Sciences, 18: 79-85, 1995.

Kershaw, T.R., Rashid-Doubell, F. & Sinden, J.D. Immunocharacterisation of *H-2k^b*-tsA58 transgenic mouse hippocampal neuroepithelial cells. Neuroreport, 5: 2197-2200, 1994.

Bradbury, E., Kershaw, T.R., Marchbanks, R.M. & Sinden, J.D. Astrocyte transplants alleviate lesion induced memory deficits independently of cholinergic recovery. Neuroscience, 65: 955-972, 1995.

Patel, S.N., Kershaw, T.R., Williams, J., Gray, J.A., Lantos, P.L. & Sinden, J.D. Neuropathological sequelae of long-term allogeneic and syngeneic neural transplantation into the hippocampus. Journal of Neural Transplantation and Plasticity, 5:211-222, 1995.

Abdulla, F.A., Calaminici, M.R., Wonnacott, S., Gray, J.A., Sinden, J.D. & Stephenson, J.D. Sensitivity of rat frontal cortical neurones to nicotine is increased by chronic administration of nicotine and by lesions of the nucleus basalis magnocellularis: comparison with numbers of [³H]nicotine binding sites. Synapse, 22:281-288, 1995.

Snape, M., Grigoryan, G., Sinden, J.D. & Gray, J.A. Dependence of the Proactive Behavioral effects of theta-driving septal stimulation upon stimulation frequency and behavioral experience: II Continually and partially reinforced running. Psychobiology, 24:22-32, 1996.

Abdulla, F.A., Bradbury, E., Calaminici, M.R., Lippiello, P.M., Wonnacott, S., Gray, J.A. & Sinden, J.D. Relationship between up-regulation of nicotine binding sites in rat brain and delayed cognitive enhancement observed after chronic or acute nicotinic receptor stimulation. Psychopharmacology, 124:323-331, 1996.

Grigoryan, G.A., Hodges, H., Mitchell, S., Sinden, J.D. & Gray, J.A. 6-OHDA lesions of the nucleus accumbens accentuate memory deficits in animals with lesions to the forebrain cholinergic projection system: effects of nicotine administration on learning and memory in the water maze. Neurobiology of Learning and Memory, 65:135-153, 1996.

Hodges, H., Sowinski, P., Fleming, P., Kershaw, T.R., Sinden, J.D., Meldrum, B.S. & Gray, J.A. Contrasting effects of fetal CA1 and CA3 hippocampal grafts on deficits in spatial learning and working memory induced by global cerebral ischaemia in rats. Neuroscience, 72:959-988, 1996.

Calaminici, M., Abdulla, F.A., Sinden, J.D. & Stephenson, J.D. Plastic changes in the cholinergic innervation of the rat cerebral cortex after unilateral lesion of the nucleus basalis with α -amino-3-OH-4-isoxazole propionic acid (AMPA): Effects of basal forebrain transplants into neocortex. Brain Research Bulletin, 42:79-93, 1997.

Abdulla, F.A., Calaminici, M., Gray, J.A., Sinden, J.D. & Stephenson, J.D. Changes in the sensitivity of frontal cortex neurones to acetylcholine after unilateral lesion of the nucleus basalis with α -amino-3-OH-4-isoxazole propionic acid (AMPA): Effects of basal forebrain transplants into neocortex. Brain Research Bulletin, 42:169-181, 1997.

Abdulla, F.A., Calaminici, M., Gray, J.A., Stephenson, J.D. & Sinden, J.D. Behavioural specificity of neocortical grafts of fetal basal forebrain tissue after unilateral lesion of the nucleus basalis with α -amino-3-OH-4-isoxosole propionic acid (AMPA). *Brain Research Bulletin*, 42:407-414, 1997.

Smith, S.E., Hodges, H., Sowinski, P., Man, C.-M., Leach, M.J., Sinden, J.D., Gray, J.A. & Meldrum, B.S. Long-term beneficial effects of BW619C89 on neurological deficit, cognitive deficit and brain damage after middle cerebral artery occlusion in the rat. *Neuroscience*, 77:1123-1135, 1997.

Hodges, H., Nelson, A., Virley, D., Kershaw, T.R. & Sinden, J.D. Cognitive deficits induced by global cerebral ischaemia: prospects for transplant therapy. *Pharmacology, Biochemistry and Behavior*, 56: 763-780, 1997.

Sinden, J.D., Rashid-Doubell, F. Kershaw, T.R., Nelson, A., Chadwick, A., Jat, P.S., Noble, M.D., Hodges, H. & Gray, J.A. Recovery of spatial learning by grafts of a conditionally-immortalised hippocampal neuroepithelial cell line into the ischaemia-lesioned hippocampus. *Neuroscience*, 81:599-608, 1997.

Raevsky, V.V., Dawe, G.S., Sinden, J.D. & Stephenson, J.D. Lesions of the nucleus basalis magnocellularis do not alter the proportions of pirenzepine- and gallamine-sensitive responses of somatosensory cortical neurones to acetylcholine in the rat. *Brain Research*, 782:324-328, 1998.

Gray, J.A., Hodges, H. & Sinden, J.D. Prospects for the clinical application of neural transplantation with the use of conditionally immortalised neuroepithelial stem cells. *Philosophical Transactions of the Royal Society B*. 1388: 1407-1421 1999.

Virley, D., Ridley, R.M., Sinden, J.D., Harland, S., Williams, C., Rashid, T., French, S., Sowinski, P., Gray, J.A., Lantos, P.L. & Hodges, H. Primary CA1 and conditionally immortal MHP36 cell grafts restore conditional discrimination learning and recall in marmosets after excitotoxic lesions of the hippocampal CA1 field. *Brain* 122: 2321-2335, 1999

Gray, J.A., Grigoryan, G., Virley, D., Sinden, J.D. & Hodges, H. Conditionally immortalised multipotential and multifunctional neural stem cell lines as an approach to clinical transplantation. *Cell Transplantation*, 1999, in press.

Mann, V.M. & Sinden, J.D. Immortalised cells. In *NeuroMethods: Cell and Tissue Transplantation in the CNS*. S.B. Dunnett, A. Boulton & G. Baker Eds. N.J. The Humana Press, 1999, in press.